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THE DELUGE

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IN THE

LIGHT OF MODERN SCIENCE.

A Discourse.

BY

WILLIAM DENTON.

BOSTON:
PUBLISHED BY WILLIAM DENTON.
1869.

PRICE TEN CENTS.

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THE DELUGE IN THE LIGHT OF MODERN SCIENCE.

If the Bible is God's book, we ought to know it. If the Creator of the universe has spoken to man, how important that we should listen to his voice and obey his instructions! On the other hand, if the Bible is not God's book, we ought to know it. Why should we go through the world with a lie in our right hand, dupes of the ignorant men who preceded us? It can never be for our soul's benefit to cherish a falsehood.

Science is, perhaps, the best test that we can apply to decide the question. Science is really a knowledge of what Nature has done and is doing; and since the upholders of the divinity of the Bible believe that it proceeded from the Author of nature, if their faith is true, it cannot possibly disagree with what science teaches.

Science is a fiery furnace, that has consumed a thousand delusions, and must consume all that remain. We cast into it astrology and alchemy, and their ashes barely remain to tell of their existence. Old notions of the earth and heavens went in, and vanished as

their dupes gazed upon them. Old religions, old gods, have become as the incense that was burned before their altars.

I purpose to try the Bible in its searching fire. Fear not, my brother: it can but burn the straw and stubble; if gold, it will shine as bright after the fiery ordeal as before, and reflect as perfectly the image of truth.

The Bible abounds with marvellous stories, — stories that we should at once reject from their intrinsic improbability, not to say impossibility, if we should find them in any other book. But, among all the stories, there is none that equals the account of the deluge, as given in the sixth, seventh, and eighth chapters of Genesis. It towers above the rest as Mount Washington does above the New-England hills; and, as travellers delight to climb the loftiest peaks, I suppose that many would be pleased to examine this lofty story, and see how the world of truth and actuality looks from its summit.

According to the account, in less than two thousand years after God had created all things, and pronounced them very good, he became thoroughly dissatisfied with every living thing, and determined to destroy them with the earth. He thus expresses himself: "I will destroy man, whom I have created, from the face of the earth, — both man and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them." Again he says to Noah, "The end of all flesh is come before me; for the earth is filled with violence through them, and behold I will destroy them with the earth."

Why should the beasts, birds, and creeping things be destroyed? What had the larks, the doves, and the bob-o-links done? What had the squirrels and the tortoises been guilty of, that they should be destroyed?

He proceeds to inform Noah how he will do this: "And behold I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven; and every thing that is in the earth shall die." And we are subsequently informed that "every thing that was in the dry land died." But why not every thing in the sea? Were the dogs sinners, and the dog-fish saints? Had the sheep been more guilty than the sharks? had the pigeons become utterly corrupt, and the pikes remained perfectly innocent? It may be, that the apparent impossibility of drowning them by a flood suggested to the writer of the story the necessity of saving them alive.

But Noah was righteous; and God determined to save him and his family, eight persons, and by their instrumentality to save alive animals sufficient to stock the world again after its destruction.

To do this, Noah was commanded to build an ark, three hundred cubits long, fifty broad, and thirty high. It was to be made with three stories, and furnished with one door, and one window a cubit wide. Into this ark were to be taken two of every sort of living thing, and of clean beasts and of birds seven of every sort, male and female, and food sufficient for them all.

There are differences of opinion about the length of the cubit: most probably it was about eighteen

inches; but taking it at twenty-two inches, the largest estimate that I believe theologians have made, the ark was then five hundred and fifty feet long, ninety-one feet eight inches broad, and fifty-five feet high. Leaving space for the floors, which would need to be very strong, each story was about seventeen feet high; and the total cubical contents of the ark were about one hundred and two thousand cubic yards. Scott, in his commentary, makes it as small as sixty-nine thousand one hundred and twenty yards; but the necessity for room was not as well understood in his day. Each floor of the ark contained five thousand six hundred and one square yards, and the three floors sixteen thousand eight hundred and three square yards, the total standing-room of the ark.

Into this were to be taken seven of every kind of fowl of the air or bird. How many kinds or species of birds are there? When Adam Clarke wrote his commentary, two thousand three hundred and seventy-two species had been recognized. Ornithology was then but in its infancy, and man's knowledge of living forms was very limited. Lesson, according to Hugh Miller, enumerates the birds at six thousand two hundred and sixty-six species; Gray, in his "Genera of Birds," estimates the number on the globe at eight thousand. Let us not crowd Noah, but take the six thousand two hundred and sixty-six species of Lesson. Seven of each of these would give us forty-three thousand eight hundred and sixty-two birds, -- from the humming-bird, the little flying jewel, to the ostrich that fans the heated air of the desert, — or nearly three for every yard of standing-room in the ark. If spaces were left for the attendants to pass

among them, to attend to the supply of their daily wants, the birds alone would crowd the ark.

But, beside the birds, there were to be taken into the ark two of every sort of unclean beast and seven of every sort of clean beast. The most recent zoölogical authorities enumerate two thousand and sixty-seven species of mammals, or, as they are commonly called, beasts. Of cetacea, or whale-like mammals, sixty-five; ruminatia, or cud-chewers, one hundred and seventy-seven; pachydermata, or thick-skinned mammals, such as the horse, hog, and elephant, forty-one; edentata, like the sloth and ant-eater, thirty-five; rodentia, or gnawers, such as the rat, squirrel, and beaver, six hundred and seventeen; carnivora, or flesh-eaters, four hundred and forty-six; cheiroptera, or bats, three hundred and twenty-eight; quadrumana, or monkeys, two hundred and twenty-one; and marsupialia, or pouched mammals, like the opossum and kangaroo, one hundred and thirty-seven. If we leave out the cetacea, that live in the water, and might be supposed to disregard a forty days' rain, we have two thousand and two species; and male and female of these, a total of four thousand and four.

But, beside these, there were to be taken into the ark seven of every kind of clean beast. And what are clean beasts? The scriptural answer is, animals that divide the hoof and chew the cud; and of these, at least one hundred and seventy-seven species are known. Five of each of these, added to the two already enumerated, make a total of four thousand eight hundred and eighty-nine mammals, from the mouse to the elephant. These beasts could not be piled one upon another like cord-wood; they could

not be promiscuously crowded together. The sheep would need careful protection from the lions, tigers, and wolves; the elephant and other ponderous beasts would require stalls of great thickness; much room would be required to enable them to obtain needful exercise, and for the attendants to supply them with food and water; and a vessel of the size of the ark would be taxed to provide for these beasts alone; and to crowd in, and preserve alive, beasts and birds, was an absolute impossibility.

But there are of reptiles six hundred and fifty-seven species; and Noah was to take into the ark two of every sort of creeping thing. Two hundred of these reptiles are, however, aquatic: hence water would not seriously affect them; but crocodiles, lizards, iguanas, tree-frogs, horned frogs, thunder-snakes, chicken-snakes, brittlesnakes, rattlesnakes, copperheads, asps, cobra de capellos, whose bite is certain death, and a host of others, must be provided for. It would not do to allow these disagreeable individuals to crawl about the ark; and nine hundred and fourteen of them would require considerable space, whether they could obtain it or not.

By this time, the ark is doubly crowded; but its living cargo is not yet completed. A dense cloud of insects, and a vast army destitute of wings, make their appearance, and clamor for admission. The number of articulates that must have been provided for is estimated at seven hundred and fifty thousand species, — from the butterflies of Brazil, fourteen inches from the tip of one wing to the tip of the other, to the almost invisible gnat, that dances in the summer's beam. Ants, beetles, flies, bugs, fleas, mosquitoes,

wasps, bees, moths, butterflies, spiders, scorpions, grasshoppers, locusts, myriapods, canker-worms, wriggling, crawling, creeping, flying, male and female, here they come, and all must be provided for.

Nor are these the last. The air-breathing land-snails, of which we know four thousand six hundred species, could never have survived a twelve months' soaking; and they must therefore be cared for. The nine thousand two hundred of these add no little to the discomfort of the trebly-crowded ark.

Now let the flood come: all are lodged in the ark of safety, and are ready for a year's voyage. But we forget: the ark has not yet received one-half of its cargo. The command given unto Noah was, "Take thou unto thee of all food that is eaten, and thou shalt gather it to thee; and it shall be for food for thee and for them;" and we are expressly told that "according to all that God commanded Noah, so did he."

Food for how long? The flood began in the "sixth hundreth year of Noah's life, in the second month, the seventeenth day of the month." Noah, his family, and the animals, went in seven days before this time, and left the ark the six hundred and first year of Noah's life, the second month, and the twenty-seventh day of the month. They were therefore in the ark for one year and seventeen days.

What a quantity of hay would be required, the material most easily obtained! An elephant eats four hundred pounds of hay in twenty-four hours. Since there are two species of elephants, the African and the Indian, there must have been four elephants in the ark; and, supposing them to live upon hay, they

would require three hundred tons. There are, at least, seven species of the rhinoceros; and fourteen of these, at seventy-five tons each, would consume no less than one thousand and fifty tons. The one thousand two hundred and thirty-nine clean beasts — oxen, elk, giraffes, camels, deer, antelope, sheep, goats, with the horses, zebras, asses, hippopotami, rodents, and marsupials — could not have required less than two thousand five hundred tons; making a total of three thousand eight hundred and fifty tons. A ton of hay occupies about eighteen cubit yards; and the quantity of hay required would fill sixty-nine thousand three hundred cubic yards of space, or more than two-thirds of the entire capacity of the ark.

If these animals were fed on other substances than hay, the extra difficulty of obtaining and preserving those substances would counterbalance any advantage that might be gained by the economy of space.

A vast quantity of grain would be necessary for thousands of birds, rodents, marsupials, and other animals; and large granaries would be required for its storage.

What flesh would be needed for the lions, tigers, leopards, ounces, wild-cats, wolves, bears, hyenas, jackalls, dogs, and foxes, martens, weasels, eagles, condors, vultures, buzzards, falcons, hawks, kites, owls, as well as crocodiles and serpents! Not one but would eat its weight in a month, and some much more. A full-grown lion eats fifteen pounds of flesh in a day: there are two species of lions; and the four would eat twenty-two thousand pounds in a year. There would be, at least, three thousand animals

feeding upon flesh; and, if we calculate that they averaged two pounds of flesh a day, this would give a total of more than two million and a quarter pounds of flesh to be stored up and distributed. And since dried, salted, or smoked meat would not answer, this flesh must have been taken into the ark alive. It would be equal to more than thirty thousand sheep at seventy-five pounds each; a great addition to the original cargo, and necessitating an extra quantity of hay for their food, till their turn came to be eaten.

Fish would be required for the otters, minks, pelicans, of which there are eight species, and must therefore have been fifty-six individuals in the ark; one hundred and five gulls, for there are fifteen species; one hundred and twelve cormorants, forty-nine gannets, one hundred and forty terns, two hundred and eighty-seven kingfishers, beside storks, herons, spoonbills, penguins, albatrosses, and a host of others; mollusks for the oyster-catcher, turnstone, and other birds.

The fish could not be preserved after death in any way to answer for food, and must therefore have been alive: large tanks for the purpose of keeping them would take up considerable of the ark's space. The water in such tanks would soon become unfitted for the respiration of the fish, and there must have been some provision, by air-pumps or otherwise, for charging the water with the air essential to their existence.

Many animals live upon insects; and this must have been the most difficult part of the provision to procure. There are nineteen species of goatsuckers;

and there must have been, in the ark, one hundred and thirty-three individuals. These birds feed upon flies, moths, beetles, and other insects. What an innumerable multitude must have been provided for the goatsuckers alone! But there are a hundred and thirty-seven species of fly-catchers; and Noah must have had a fly-catcher family of nine hundred and fifty-nine individuals to supply with appropriate food. There are thirty-seven species of bee-eaters; and there must have been two hundred and fifty-nine of these birds to supply with bees. A very large apiary would be required to supply their needs. But, beside these, insects for swallows, swifts, martins, shrikes, thrushes, orioles, sparrows, the beautiful trogans and jacamars, moles, shrews, hedgehogs, and a multitude of others, too numerous to mention, but not too numerous to eat. Ants, also, for the ant-eaters of America, the aard-vark of Africa, and the pangolin of Asia. The great ant-eater of South America is an animal sometimes measuring eight feet in length. It lives exclusively on ants, which it procures by tearing open their hills with its hooked claws, and then drawing its long tongue, which is covered with glutinous saliva, over the swarms which rush out to defend their dwelling. Many bushels of ants would be needed for the pair of ant-eaters before the ark landed on Ararat. How were all the insects caught, and kept for the use of all these animals for more than a year? A hundred men could not catch a sufficient number in six months. And, if caught, how could they be preserved, together with the original stock of insects necessary to supply the world after the deluge? Some insects eat only bark;

others, resinous secretions, the pith, solid wood, leaves, sap in the veins, as the aphide, flowers, pollen, and honey. Wood, bark, resin, and honey might have been supplied; but how could green leaves, sap, flowers and pollen, be furnished to those insects absolutely requiring them for existence? Thirty species of insects feed on the nettle, but not one of them could live on dried nettles. Rösel calculates that two hundred species subsist on the oak; but the oak must be in a growing condition to supply them with food. In no other way, then, could the insects have been preserved alive than by large green-houses, the heat so applied as to suit the plants of both temperate and tropical climates, and the insects so distributed among them, that each could obtain its appropriate nourishment.

Fruit would be necessary for the four hundred and forty-two monkeys, for the plantain-eaters, the fruit-pigeons of the Spice Islands that feed on nutmegs, for the toucans and the flocks of parrots, parroquets, cockatoos, and other fruit-eating birds. As they did not know how to can fruit in those days, and dried fruit would be altogether unsuitable, there must have been a large green-house for raising all manner of fruit necessary for the frugivorous multitude.

How were the various animals obtained? The command given to Noah was, "Two of every sort shalt thou *bring* into the ark."

Animals, as is now well known, belong to limited centres, outside of which they are never found in a natural state; and naturalists know that these centres were established ages before the time when the deluge is supposed to have occurred.

Thus, Hugh Miller, in his "Testimony of the Rocks," says, "We now know that every great continent has its own peculiar fauna; that the original centres of distribution must have been, not one, but many; further, that the areas or circles around these centres must have been occupied by their pristine animals in ages long anterior to that of the Noachian Deluge; nay, that in even the latter geologic ages they were preceded in them by animals of the same general type. There are fourteen such areas, or provinces, enumerated by the later naturalists;" and Cuvier, quoted by Miller, says, "The great continents contain species peculiar to each; insomuch, that whenever large countries, of this description, have been discovered, which their situation had kept isolated from the rest of the world, the class of quadrupeds which they contained has been found extremely different from any that had existed elsewhere. Thus, when the Spaniards first penetrated into South America, they did not find a single species of quadruped the same as any of Europe, Asia, or Africa."

The white bear is never found except in the arctic regions; the great grizzly bear is only found in the neighborhood of the Rocky Mountains. Nearly all the species of mammals found in Australia are confined to that country, as the wingless birds of New Zealand are confined to that, and the sloth, armadillo, and other animals, to South America.

A journey to the polar regions would be necessary to obtain the white bear, the musk-ox, of which seven would be required, since it is a clean beast; seven reindeer, likewise; the white fox, the polar hare, the lemming, and seven of each species of cormorant,

gannet, penguin, petrel, and gull, some of which are as large as eagles, as well as mergansers, geese, and ducks, certain species of which are only found in the frigid zone. Noah or his agents must have discovered Greenland and North America thousands of years before Columbus was born: they must have preceded Behring, Parry, Ross, Kane, and Hayes in exploring the Arctic regions. They searched the ice-floes and numerous islands of the Arctic seas, snow-shoed, over the frozen *tundras* of Siberia, to be certain that no living thing escaped them; then, after catching and caging all the animals, conveyed them, with all manner of food necessary for their sustenance, together with ice to temper the heat of the climate to which they were for more than a year to be exposed, returned to the nearest port, and, after a toilsome journey from the sea-coast to Armenia, arrived at their destination. How many of these animals would survive the journey? and, of those that did, how many would survive the change of climate and habits?

Another party must have visited temperate America; traversed New England in its length and breadth, forded wide streams, made their way through unbroken wildernesses, traversed the Great Lakes, roamed over the Rocky Mountains, and secured the black bear, cinnamon bear, wapiti or Canadian stag, the moose, American deer, antelope, mountain sheep, buffalo, opossum, rattlesnake, copperhead, and an innumerable multitude of other animals — insects birds, reptiles, and mammals, that are only to be found in the temperate regions of America.

A voyage to South America must have been made

to obtain tapirs, pumas, peccaries, sloths, ant-eaters, armadilloes, seven each of the llama, alpaca, and vicuna, beside monkeys, birds, and insects innumerable. A vessel nearly as large as "The Great Eastern" must have been employed, or a number of smaller ones, to accommodate the collectors, the animals, and food for a voyage across the Atlantic. There must have been, at least, a thousand men, wandering through the woods of Brazil, along the valley of the Amazon, the Orinoco, and the La Plata; paddling up the streams, scaling the mountains, roaming over the pampas, climbing the tall trees, turning over every stone and log, and exploring every nook, to discover the snails, bugs, insects, worms, reptiles, and other animals indigenous to South America, from the Isthmus to Terra-del-fuego.

There must have been obtained four elephants, for there are two species, the Asiatic and the Indian; fourteen rhinoceroses, one of which is found only in South Africa, another in the island of Java, and a third in Sumatra; two hippopotami, and possibly four, for some authorities say there are two species. Seven giraffes, since they are clean beasts, must have been caught and driven from Central Africa (many more, indeed, must have been caught, that the required number might reach the ark and be preserved); fourteen camels, a hundred and forty oxen (for there are twenty species, and they are clean); and no less than six hundred and ninety-three deer and antelope, of which there are ninety-nine species recognized: these to be collected in various parts of Europe, Asia, Northern and Southern Africa, and America.

New Zealand must have been visited to obtain its

wingless birds; Mauritius for its dodo, then living; Australia for its marsupials and other peculiar animals; and every large island, and most of the small ones, to obtain those forms of life that are only to be found in each. From the island of Celebes, they must have taken the eighty species of birds that are confined to it, which would require them to catch, cage, feed, and convey five hundred and sixty specimens: a no small job of itself. Ten men that could accomplish that, and carry them safe to Armenia, would do all that men could do in ten years. From the Phillipine Islands, the seventy-three species of hawks, parrots, and pigeons, peculiar to them; which would require, since seven of every kind of bird were to be taken into the ark, no less than five hundred and eleven specimens. From New Guinea, and the neighboring islands, one hundred and twenty-six of the magnificent birds of paradise, since there are eighteen species.

A faint idea of the difficulties encountered and overcome by Noah's agents may be gathered from what Wallace, in his recent work on the Malay Archipelago, informs us respecting these birds of paradise. "Five voyages to different parts of the district they inhabit, each occupying in its preparation and execution the larger part of a year, produced me only five species out of the fourteen known to exist in the New-Guinea district." If it took Wallace, with all the assistance that he had from various officials, five years to obtain five dead birds, — for such they were, — how long did it take Noah's agents to obtain a hundred and twenty-six live birds? Wallace could only obtain two alive, and for these he had to pay five hundred dollars.

If the antediluvian sinners were any thing like the modern ones, Noah must have been richer than the Rothschilds, or he never could have obtained their services; which he must have done, or it could never be truthfully said, "according to all that God commanded him, so did he."

The collection of the land-snails alone would be no small tax. Seventy-four are peculiar to Great Britain: hence there must have been a hundred and forty-eight snails collected from that island. Six hundred species are found in Southern Europe alone, and twelve hundred must have been collected from there; eighty in Sicily, ten in Corsica, two hundred and sixty-four in the Madeira Islands, a hundred and twenty in the Canary Islands, twenty-six in St. Helena, sixty-three in Southern Africa, eighty-eight in Madagascar, a hundred and twelve in Ceylon, a hundred in New Zealand, and others on every large and some of the small islands of the globe. The world must have been circumnavigated many times before the vessel of Magellan was built, and every island visited and ransacked ages before the time of Captain Cook. But it seems surprising, since these voyages must have been performed by the sinful antediluvians, that they did not save themselves in their ships when the flood came; for vessels that could perform such voyages would certainly have survived the flood more readily than the clumsy ark.

But was it really done? A thousand men in ten years, with all the appliances of modern art, — steamboats, railroads, canals, coaches, and express companies, — could not accomplish it in ten years; nor ten times the number of men keep all the animals alive in

one spot for one year, if they were collected together.

"But," says the Christian, "Noah never did collect them: no intelligent person in this day ever supposes that he did." What then? "The Bible expressly declares that 'they went in unto Noah into the ark.' By instinct, such as leads the swallow to take its distant flight at the approach of winter, they came from all parts of the globe to the ark of safety."

It is true that one account does say that they came in unto Noah, for there are two very different stories of the deluge mixed up in those chapters of Genesis; but, although flying birds might perform such a feat as going twelve thousand miles to the ark, which would be necessary for some, how could other animals get there? It would be impossible even for some birds. How could the ostriches of Africa, the emus of Australia, and the rheas of South America, get there, — birds that never fly? There are three species of the rhea, or South-American ostrich; and twenty-one of these would have a journey of eight thousand miles before them, by the shortest route: but how could they cross the Atlantic? If they went by land, they must have traversed the length of the American continent, from Patagonia to Alaska, crossed at Behring's Strait when it was frozen, and then travelled diagonally across nearly the whole continent of Asia to Armenia, after a journey that must have required many months for its completion. The sloths, that have been confined to South America ever since the pliocene period at least, must have taken the same route. How they crossed the moun-

tain streams, and lived when passing over broad prairies, it would be difficult to say. A mile a day would be a rapid rate for these slow travellers, and it would therefore require about forty years for them to arrive at their destination. But, since the life of a sloth is not as long as this, they must have bequeathed their journey to their posterity, and they to their descendants, born on the way, who must have reached the ark before the door was closed. The land-snails must have met with still greater difficulties. Impelled by most wonderful instinct, they commenced their journey full a thousand years before the time; and their posterity of the five hundredth generation must have made their appearance, and been provided with a passage by the venerable Noah.

Scott, who wrote a commentary on the Bible seventy or eighty years ago, must have seen some of these difficulties, though with nothing like the clearness with which science enables us to see them now. He says, "There must have been a very extraordinary miracle wrought, perhaps by the ministration of angels, in bringing two of every species to Noah, and rendering them submissive to him and peaceable with each other; yet it seems not to have made any impression on the hardened spectators."

Think of a troop of angels fly-catching, snail-seeking, and bug-hunting through all lands, lugging through the air, horses, giraffes, elephants, and rhinoceroses, and dropping them at the door of the ark. One has crossed the Atlantic with rattlesnakes, copperheads, and boas twined around him, almost crippling his wings with their snaky folds; and another

with a brace of skunks, one under each wing, that the renewed world may not lack the fragrance of the old. What a subject for the pencil of a Raphael or Doré! Had the "hardened spectators" beheld such a scene as this, Noah and his cargo would have been cast out of the ark, and the sinners themselves, converted by this stupendous miracle, would have taken passage therein.

Not only must there have been a succession of most stupendous miracles to get the animals to the ark, but also to return them to their proper places of abode. But few of them could have lived in the neighborhood of Ararat, had they been left there. How could the polar bear return to his home among the icebergs, the sloths to the congenial forests of the New World, and all the mammals, reptiles, insects, and snails to their respective habitats, the homes of their ancestors for ages innumerable? To return them was just as necessary as to obtain them, and, though less difficult, was equally impossible.

How could eight persons, all that were saved in the ark, attend to all these animals! Nearly all would require food and water once a day, and many twice. In a menagerie, one man takes care of four cages, — feeds, cleans, and waters the animals. In the ark, each person, women included, must have attended each day to five thousand four hundred and eighty-two birds, six hundred and forty-five beasts, one hundred and fourteen reptiles, one thousand one hundred and fifty land-snails, and one hundred and eighty-seven thousand five hundred insects.

Few persons have an idea of the difficulty of keeping even the common birds of a temperate climate

alive in confinement for any length of time. Food that is quite suitable in a wild state may be fatal to them when they are kept in the house. Linnets feed on winter rape-seed in the wild state, but soon die if fed upon it in-doors. "They are to be fed," says Bechstein, "on summer rape-seed, moistened in water; and their food must be varied by the addition of millet, radish, cabbage, lettuce and plantain-seeds, and sometimes a few bruised melon-seeds or barberries." Nightingales, he says, should be fed on meal, worms, and fresh ants' eggs: but, if it is not possible to get these, a mixture of hard egg, ox-heart minced, and white bread may be given; but this often kills the birds. No such food would do for Noah's nightingales, then, or where would have been the nightingale's song? They must have been fed on meal, worms, and *fresh* ant's eggs. How they were obtained, we have, of course, no knowledge. Bechstein says that larks may be fed with "a paste made of grated carrot, white bread soaked in water, and barley or wheat meal, all worked together in a mortar. In addition to this paste, larks should be supplied with poppy-seed, bruised hemp, crumb of bread, and plenty of greens, such as lettuce, endive, cabbage, with a little lean meat or ant-eggs occasionally." He says the cage should be furnished with a piece of fresh turf, often renewed, and great attention should be paid to cleanliness. The care of the birds in the ark probably fell to the women. As they had not read Bechstein, or any other author on bird-keeping, — and thousands of the birds must have been total strangers to them, — how did they know what diet to supply them with, supposing they had time to supply them at all?

If the difficulty was great to keep the birds of a temperate climate, how much greater must it have been to keep tropical birds in a climate altogether unsuited to them? The two birds of paradise bought by Wallace were fed, he says, on rice, bananas, and cockroaches: of the last, he obtained several cans from a bake-house at Malta, and thus got his paradise birds, by good fortune, to England. But how many cans of cockroaches would be necessary for a hundred and twenty-six of such birds, — the number in the ark? and where were the bake-houses from which the supply might be obtained?

To keep this vast menagerie clean would have required a large corps of efficient workers, especially when we remember that there was but one door in each story, as some suppose; or one door to the whole ark, as the story seems to teach, and this door was closed; and but one window, and that apparently in the roof. The Augean stable, the cleansing of which was one of the labors of Hercules, can but faintly indicate what must have been the condition of the ark in less than a month, supposing the animals to subsist as long.

Whence came the water that covered the earth to the tops of the highest mountains? "All the high hills that were under the whole heaven were covered. Fifteen cubits upward did the waters prevail; and the mountains were covered," says the record. And to do this, it rained for forty days and forty nights. A fall of an inch of water in a day is considered a very heavy rain in Great Britain. The heaviest single rain recorded fell on the Khasia Hills in India, and amounted to thirty inches in twenty-four hours.

If this deluging rain could have continued for forty days and nights, and had it fallen over the entire surface of the globe, the amount would only have been one hundred feet; which, instead of covering the mountains, would not have covered the hills. But, of course, such a rain is only possible for a very limited time, and on a small portion of the earth's surface.

Sir John Leslie, in "The Encyclopedia Britannica," says, "Supposing the vast canopy of air, by some sudden change of internal constitution, at once to discharge its whole watery store, this precipitate would form a sheet of scarcely five inches thick over the surface of the globe." But if the water that covered the earth above the tops of the highest mountains came by rain, it must have rained seven hundred feet a day for forty days! or there must have fallen each day, according to Sir John Leslie's estimate, more than fourteen hundred times as much water on the earth as the atmosphere contained!

But the writer says, "The fountains of the great deep were broken up." To the Jews, who supposed, with David, that God had founded the earth upon the seas, and established it upon the floods, this meant something; but, in the light of geology, we see that it only demonstrates the ignorance of the man who wrote and the people that believed the story.

Adam Clarke, commenting on this passage, says, "It appears that an immense quantity of water occupied the centre of the antediluvian earth; and, as this burst forth by the order of God, the circumambient strata must sink in order to fill up the vacuum occasioned by the elevated waters." If true, it would not

have assisted in drowning the world one spoonful. For if the strata sank anywhere to fill the hollow previously occupied by the water, it would only make the mountains so much higher in comparison: hence it would require just that much extra water to cover them. In the light of geology, however, the notion is sufficiently absurd. A mile and a half deep, the earth's interior is hot enough to convert water into steam; there is, therefore, no chance for water to exist in its centre, or anywhere near it.

It is as great a difficulty to discover where the water went when the flood was over. We are told that the fountains of the deep and the windows of heaven were stopped, and the rain was restrained. But this could do nothing towards diminishing the water. All that it could possibly accomplish would be to prevent the rise of the water. But we are also told that "God made a wind to pass over the earth." All that the wind could do, however, would be to convey to the atmosphere the moisture it took up in vapor; and this could not have lowered the water a yard. The highest mountain, Kunchinginga, is more than twenty-eight thousand feet high; the flood prevailed one hundred and fifty days, and abated two hundred and twenty-five; and if this abatement was done by the wind, it must have blown an ocean of water from the entire surface of the earth, one hundred and twenty-five deep, every day for eight months! All the hurricanes that ever blew, blowing at once, would be the gentlest zephyr of a summer's eve, compared with such a wind as that; and by what possibility could such a craft as the ark survive the storm?

A question, proper to be asked is, *How were the*

animals supplied with light? and how did the attendants see to wait upon them in the first and second stories of the ark? There was but one window, and that only twenty-two inches in size, and it appears to have been in the third story. It was a day when kerosene was unknown, and tallow dips were uninvented. How did these animals live in the darkness? and, above all, how did Noah and his family supply their wants? It could have been no easy or pleasant thing to wait upon hungry lions, tigers, crocodiles, and rattlesnakes in the dark, to say nothing of the danger.

How did they breathe? There was but one twenty-two inch window; the ark was "pitched within and without with pitch;" "The Lord shut him in." Talk of the Black Hole of Calcutta: it must have been pure as the breath of morning compared with the condition of the ark in one day.

Where did they obtain water for drink? Supposing all the additional water needed to drown the world was fresh, when mingled with the water of the sea, as much as one-tenth of it would be salt water, and this would render it utterly unfit for drink. Provision must therefore have been made for water; and a space certainly half as large as the ark must have been taken up for the water necessary for this immense multitude.

The fish, mollusks, crustaceans (such as our crabs and lobsters), and all corals, must have died if such a flood had taken place, — the fresh-water fish from the salt water at once added to their proper element, and the salt-water fish and other marine forms from so large an addition of fresh water. For months, there could have been no shore: what is now the margin

of the sea was buried miles deep; and all the fucoidal vegetation, upon which myriads of animals subsist, must have perished, and the animals with it, if the change in the constitution of the water had not killed them. Every time a man swallows an oyster, he has evidence that the Noachian deluge did not take place.

The plants must have perished also. How many of our trees, to say nothing of the grasses and feeble plants, could endure a soaking of nearly twelve months' duration? Some of the very hardiest seeds might survive, but the number could not be large. The present condition of vegetation upon the globe is another evidence, then, that this deluge did not take place.

When the ark landed on Mount Ararat, and the animals went forth, how did they subsist? As they went down the mountains, the carnivorous animals would have devoured a large portion of the herbivorous animals saved in the ark. Beside the lions, tigers, leopards, ounces, and other carnivorous mammals, amounting to eight hundred and ninety-two, there were in the ark three hundred and thirty-six eagles, for there are forty-eight species; seventy-seven buzzards, seven hundred and twenty-one falcons, seventy hawks, one hundred and nineteen vultures, and four hundred and forty-eight owls. What chance would a few sheep, rabbits and squirrels, rats and mice, doves and chickens, have, among this ravenous multitude? How could the ants escape, with ant-eaters, aard-varks and pangolins on the watch for them as soon as they made their appearance? There were as many dogs as hares, as many

cats as mice. How long a lease of life could the sheep, hares, and mice, calculate upon? Before the herbivorous animals had multiplied, so as to furnish the carnivorous animals with food, they must all have been destroyed, after all the pains taken for their preservation. Noah should have given the herbivora, at least a year's start, especially since the vegetation of the globe was so deficient.

But we are told that the species of animals may have been much fewer in the days of Noah; and, therefore, much less room would be necessary. A single pair of cats, say some, may have produced all the animals of the cat kind; a pair of dogs, all the animals that belong to the dog family. Such an explanation might have been given when zoölogy was little known, and geology had no existence; but there is no place for it now. Animals change, it is true, and all species have probably been produced from a few originals; but the process by which this is accomplished is so slow in its operation, that we have no knowledge of the formation of a new species. We know that lions, tigers, and cats of various species, existed long before the time of the deluge, and dogs, wolves and foxes; and we find mummied cats, dogs, and other animals in Egypt, as old or older than the deluge, so little changed from those of the present time in the same locality, that we cannot recognize any difference between them.

"*You seem to forget that all things are possible with God: he could have packed these animals into an ark of one-half the size, brought them altogether in the twinkling of an eye, and returned them as rapidly.*"

And you seem to forget that the account in Gene-

sis gives us no hint of any such miracle. Noah was to take the animals to him, and to take unto him of all food that is eaten; and, as Hugh Miller remarks, "the expedient of having recourse to supposititious miracle in order to get over a difficulty insurmountable on every natural principle, is not of the nature of an argument, but simply an evidence of the want of it. Argument is at an end when supposititious miracle is introduced." But, if a miracle was worked, it was not one, but ten thousand of the most stupendous miracles, and entirely unnecessary ones. This, the Rev. Dr. Pye Smith saw, when he said, "We cannot represent to ourselves the idea of all land animals being brought into one small spot, from the polar regions, the torrid zone, and all the other climates of Asia, Africa, Europe, and America, Australia, and the thousands of islands, — their preservation and provision, and the final disposal of them, — without bringing up the idea of miracles more stupendous than any that are recorded in Scripture. The great decisive miracle of Christianity, — the resurrection of the Lord Jesus, — sinks down before it."

It is a favorite method with the advocates of special revelations to show their agreement with the operations of natural law, till a difficulty is met with that cannot be answered, when they flee at once to miracle to save them. But, in this case, miracle itself cannot save them.

Geology furnishes us with evidence that no such deluge has taken place. According to Hugh Miller, "In various parts of the world, such as Auvergne in Central France, and along the flanks of Etna, there are cones of long-extinct or long-slumbering volcanoes,

which, though of at least triple the antiquity of the Noachian deluge, and though composed of the ordinary incoherent materials, exhibit no marks of denudation. According to the calculations of Sir Charles Lyell, no devastating flood could have passed over the forest-zone of Etna during the last twelve thousand years."

Archæology enters her protest equally against it. We have abundance of Egyptian mummies, statues, inscriptions, paintings, and other representations of Egyptian life belonging to a much earlier period than the deluge. With only such modifications as time slowly introduced, we find the people, their language, and their habits, continuing after that time, as they had done for centuries before. Lepsius, writing from the pyramids of Memphis, in 1843, says, "We are still busy with structures, sculptures, and inscriptions, which are to be classed, by means of the now more accurately determined groups of kings, in an epoch of highly flourishing civilization, as far back as the fourth millennium before Christ." That is one thousand six hundred and fifty-six years before the time of the flood. Lyell says that "Chevalier Bunsen, in his elaborate and philosophical work on ancient Egypt, has satisfied not a few of the learned, by an appeal to monumental inscriptions still extant, that the successive dynasties of kings may be traced back without a break, to Menes, and that the date of his reign would correspond with the year 3,640 B. C.;" that is nearly thirteen hundred years before the time of the deluge. Strange that the whole world should have been drowned and the Egyptians never knew it!

From the "Types of Mankind," we learn that the fact

is "asserted by Lepsius, and familiar to all Egyptologists, that negro and other races already existed in Northern Africa, on the Upper Nile, 2,300 years B.C."

But this is only forty-eight years after the deluge. What kind of a family had Noah? Was amalgamation practised by any of Noah's sons? If all the human occupants of the ark were Caucasians, how did they produce negro races in forty-eight years? The facts again compel us to announce the fabulous character of this Genesical story of the deluge.

"*No intelligent person now believes that it was a total deluge: Buckland, Pye Smith, Miller, Hitchcock, and all Christian geologists, agree that it was a partial deluge, and the account can be so explained.*"

How strange that God should dictate an account of the deluge that led everybody to a false conclusion with regard to it, till science taught them a better. But let us read what the account says, and see whether it can be explained to signify a partial deluge. To save the Bible from its inevitable fate, such men as Buckland, Smith, Miller, Hitchcock, and other Bible apologists, it is evident from their writings, were ready to resort to any scheme, however wild.

I read (Gen. vi. 7), "I will destroy both man and beast, and the creeping thing." How could a partial deluge accomplish this? (v. 13); "The end of all flesh is come before me. I will destroy them with the earth." How could all flesh be destroyed with the earth by any other than a total deluge? (v. 17); "I do bring a flood of waters upon the earth, to destroy all flesh wherein is the breath of life, from

under heaven; and every thing that is in the earth shall die." Not only is man to be destroyed, but all flesh wherein is the breath of life, from under heaven, and every thing in the earth is to die. Can this be tortured to mean a partial deluge? (vii. 19); "And the waters prevailed exceedingly upon the earth; and all the high hills that were under the whole heaven were covered; and all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of creeping thing that creepeth upon the earth, and every man. All in whose nostrils was the breath of life, of all that was in the dry land, died. And every living substance was destroyed which was upon the face of the ground, both man and cattle, and the creeping things, and the fowl of the heaven; and they were destroyed from the earth, and Noah only remained alive, and they that were with him in the ark." Had the man who wrote this story been a lawyer, and had he known how these would-be-Bible-believers, and at the same time geologists, would seek to pervert his meaning, he could not have more carefully worded his account. It is not possible for any man to express the idea of a total flood more definitely than this man has done. If not a total flood, why save the animals, above all the birds? All that Noah and his family need to have done would have been to move out of the region till the storm was over. If a partial flood, how could the ark have rested on the mountains of Ararat? Ararat itself is seventeen thousand feet high, and it rises from a plateau that is seven thousand feet above the sea-level. A flood that enabled the ark to float on to that mountain could not have been far from uni-

versal; and, when such a flood is accounted for on scientific principles, it will be just as easy to account for a total flood.

"*The flood was only intended to destroy man, and therefore only covered those parts of the earth that were occupied by him.*" The Bible states, however, that it was intended to destroy every thing wherein was the breath of life; and your account and the Bible account do not at all agree. But, if man was intended to be destroyed, the flood must have been wide-spread. We know that Africa was occupied before that time, and had been for thousands of years, by various races. We learn, from the recent discoveries in the Swiss Lakes, that man was in Switzerland before that time; in France, as Boucher's and Rigollet's discoveries prove; in Great Britain, as the caves in Devonshire show; in North America, as the fossil human skull beneath Table Mountain demonstrates. Hence, for the flood to destroy man alone at so recent a period, it must have been as wide spread as the earth.

Even according to the Bible account, the garden of Eden, where man was first placed, was somewhere near the Euphrates; and in sixteen hundred years the race must have rambled over a large part of the earth's surface. The highest mountains in the world, the Himalayas, are within two thousand miles of the Euphrates. That splendid country, India, would have been occupied long before the time of the deluge; and, on the flanks of the Himalayas, man could have laughed at any flood that natural causes could possibly produce.

"How do you account, then, for these traditions of a deluge that we find all over the globe?"

Nothing more easy. In all times floods have occurred; some by heavy and long-continued rains, others by the bursting of lake-barriers or the irruption of the sea; and wherever traditions of these have been met with, men with the Bible story in their minds have at once attributed their origin to the Noachian deluge.

"But Jesus and the apostles indorse the account of the deluge."

Granted; but does that transform a fable into a fact? They believed the story just as our modern theologians believe it; because they were taught it when they were children, and had not learned better. Jesus says (Matt. xxv. 37–39), "But as the days of Noe were, so shall also the coming of the Son of man be. For, as in the days that were before the flood they were eating and drinking, marrying and giving in marriage, until the day that Noe entered into the ark, and knew not until the flood came and took them all away; so shall also the coming of the Son of man be." If the man had regarded the story as false, he never would have referred to it in such a manner. And, in this manifestation of credulity on the part of Jesus, we can see the very false estimate placed upon him by so large a portion of the people of this country. Let the truth be spoken, though Jesus and all other idols be overthrown. So he would say, if alive, or he was not as good and intelligent a man as I think he was.

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